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EXAMINER	
BRISTOL, LYNN ANNE	

ART UNIT	PAPER NUMBER
1643	

NOTIFICATION DATE	DELIVERY MODE
03/29/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary	Application No.	Applicant(s)	
	10/542,839	KOJIMA, TETSUO	
	Examiner	Art Unit	
	LYNN BRISTOL	1643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 2/9/11.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1,2,4-7,10,14,15,18 and 27-32 is/are pending in the application.

4a) Of the above claim(s) 10 and 18 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,2,4-7,14,15 and 27-32 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1, 2, 4-7, 10, 14, 15, 18, and 27-32 are all the pending claims for this application.

2. Claims 1, 2, 6, and 7 were amended in the Response of 2/9/11.

3. Claims 10 and 18 are withdrawn from examination.

4. Claims 1, 2, 4-7, 14, 15 and 27-32 are all the pending claims under examination.

5. The finality of the Office Action of 3/17/10 is withdrawn in view of the new art references cited by the examiner. This Office Action in non-final.

Withdrawal of Objections

Claim Objections

6. The objection to Claims 1, 2, 6, and 7 because of informalities where each of the claims recites “linked to a bacterial secretion signal” but for purposes of consistency, should seemingly recite “linked to a bacterial secretion signal peptide” is withdrawn.

Applicants have deleted the limitations referring to the first, second, third, etc., Fd being encoded by a DNA linked to a bacterial secretion signal peptide.

Rejections Maintained

Claim Rejections - 35 USC § 112, first paragraph

Enablement

7. The rejection of Claims 1, 2, 4-7, 15 and 27-32 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement is maintained.

The rejection was set forth in the Office Action of 6/20/08 as follows:

"Nature of the Invention/ Skill in the Art

Claims 1 and 3-6 are interpreted as being drawn to a method of screening for commonly shared antibody light chains which correspond to two or more types of different antibody heavy chains where in the initial step host cells "secreting" the heavy chain against a target antigen are provided, then a phage library encoding a plurality of different light chains is introduced into the host cells in order to secrete a library of phage particles presenting the heavy chain and a light chain, where the library is screened for specific binding to the target antigen, then where the screened library is introduced into host cells "secreting" a second heavy chain that binds to a different antigen than the first antigen in order to secrete a library of phage particles presenting the second heavy chain and a light chain, and finally where the phage libraries produced from the second introducing step are selected for binding to the second target antigen (Claim 1), where the first and second heavy chains are Fd (Claim 3), the host is E. coli (Claim 4), the steps are performed twice or more (Claim 5) and the method further comprises introducing the second screened phage particle library into a host "secreting" a third heavy chain that binds to a third and different antigen from the first and second antigens and selecting the phage particle library that bind to the third antigen (Claim 6).

Claims 2, 7 and 13-15 are interpreted as being drawn to a method of screening for commonly shared antibody light chains which correspond to two or more antibody heavy chains of different amino acid sequence where in the initial step host cells "secreting" the heavy chain against a target antigen are provided, then a phage library encoding a plurality of different light chains is introduced into the host cells in order to secrete a library of phage particles presenting the heavy chain and a light chain, where the library is screened for specific binding to the target antigen, then where the screened library is introduced into host cells "secreting" a second heavy chain comprising a different amino acid sequence than the first heavy chain in order to secrete a library of phage particles presenting the second heavy chain and a light chain, and finally where the phage libraries produced from the second introducing step are selected for binding to the target antigen recognized by the second antibody (Claim 2), and the method further comprises introducing the second screened phage particle library into a host "secreting" a third heavy chain having an amino acid sequence different from the first and second heavy chain and selecting the phage particle library that bind to the antigen recognized by the third heavy chain (Claim 7), where the first and second heavy chains are Fd (Claim 13), the host is E. coli (Claim 14), and the steps are performed twice or more (Claim 15).

The relative skill in the art required to practice the invention is a molecular immunologist with a background in phage display library production and screening for recombinant antibodies.

Disclosure in the Specification

The specification generally teaches methods of screening for commonly shared light chains which correspond to two or more types of different antibody heavy chains. Hosts which secrete heavy chains of antibodies that bind to desired antigens must be obtained first. Two types of hosts that each secretes a heavy chain corresponding to one of the two types of desired antigens are necessary for generating a BsAb, three types are necessary for a tri-specific antibody, and four types are necessary for a tetra-specific antibody. To obtain these hosts, the specification teaches producing antibody-producing cells from mammals (p. 7, lines 9-28). Host cells that secrete antibody heavy chains may secrete full-length antibody heavy chains or partial fragments (p. 10, lines 21-23). A gene portion that encodes a desired antibody heavy chain is introduced into an expression vector that is suitable for expression in appropriate host cells. Host cells are preferably bacteria that can be infected by phages, particularly gram negative bacteria (p. 10, lines 30-35). Phage particles contemplated by the invention are listed on p. 12, lines 20-23.

The following examples are provided for performing method steps:

Eukaryotic host cell/ expression vector (working example): the specification at p. 13, lines 2-16 incorporates by reference the disclosure from WO 95/15393 for constructing antibody libraries using eukaryotic cells that present

antibodies on their cell surfaces. An expression vector carrying a gene that encodes a desired heavy chain (for example, Fd), and is linked downstream of a promoter appropriate for its expression and a signal sequence which enables the secretion of the heavy chain, is introduced into eukaryotic host cells. Expression vectors are constructed with light chain-encoding genes linked to a transmembrane region-encoding sequence and inserted downstream of an appropriate promoter, so that the light chains will be displayed on cell surfaces when expressed. By introducing light chain expression vectors into the aforementioned heavy chain-secreting host cells, host cells which *express on their cell surfaces* antibodies that bind to a desired antigen can be selected. The displayed antibody is a Fab fragment when Fd is used as the heavy chain and those comprising VL and CL are used as the light chains.

Bacterial host cell/ phage library (prophetic example): A light chain library is introduced into the E. coli host which expresses an antibody A heavy chain (for example, Fd), and by infecting the host with helper phages, a phage library, which presents *on their surfaces* antibodies comprising an antibody A heavy chain and various light chains (Fab when the heavy chain is Fd and the light chain comprises VL and CL) as fusion proteins (p. 12, line 30- p. 13, line 1).

The specification is enabling for using a host cell system compatible with a phage library being introduced into the host cell such as a bacterium which produces phage particles expressing an assembled antibody heavy and light chain on the particle surface after following the method steps. The specification is not enabling for introducing a phage library into just any host cell much less where the host cell is a eukaryotic cell. The specification is not enabling for any host cell having the ability to "secrete" an antibody heavy chain much less where a bacterial host cell secretes the first or second or third antibody heavy chain. The claims encompass any host cell a) having the ability to secrete an antibody heavy chain and b) capable of being infected with a phage particle library whereas the specification is only enabling for using phage particles to infect a bacterium where at most the resultant, selected phage particle library also expresses the heavy chain and light on the surface. The specification is not enabling for the genus of host cells having all of the properties of the instant claimed method.

Prior Art Status: E. coli host cells express and transport antibody fragments comprising a bacterial signal peptide into the periplasmic space

The prior art does not recognize bacterial cells, more specifically E. coli, as being capable of secreting antibody fragments absent the fragment being engineered to have a bacterial signal peptide. As reviewed by Kipriyanov et al. (Molec. Biol. 12: pp. 173-201 (1999)) E. coli can express antibody fragments such as Fab, Fv and scFv into the periplasm. "Periplasmic expression has permitted the functional testing of a wide variety of antibody fragments with different antigen binding specificities. The antibody fragments are usually correctly processed in the periplasm, they contain intramolecular disulfide bonds and are soluble. However, the high-level expression of a recombinant protein with a bacterial signal sequence in E.coli often results in the accumulation of insoluble antibody fragments after transport to the periplasm, presumably via the aggregation of a folding intermediate"...and "high protein concentrations of the secreted antibody fragment in the periplasmic space would favor the formation of insoluble aggregates over correct folding."

Thus one of skill in the art could not even predict that any antibody heavy chain could be "secreted" by any host cell much less a bacterium and that the same host cell could be infected with a library of phage particles encoding any random antibody light chain where the host cell then produced a phage particle expressing on its cell surface an assembled heavy and light chain antibody with specific antigen binding ability or at least antigen binding ability for the recognized antigen of the heavy chain. Because of the lack of working examples in the specification for the scope of host cells encompassed by the instant method claims, the ordinary artisan would be forced into undue trial and error experimentation to practice using the method based on the written description in the specification alone."

The rejection was maintained in the Office Action of 6/3/09 as follows:

"Applicants allegations on pp. 8-11 of the Response of 3/17/09 have been considered and are persuasive in part as regards point (1) (a phage library in any kind of host cell) on p. 9 but unpersuasive as regards point (2) (making the method work in bacterial cells) on p. 9.

As regards *point (1)*, Applicants allege that in amending the generic claims to require that the host is bacterial in order to be infected with a phage library, point one (1) of the rejection is overcome. The examiner concurs that this aspect of the rejection is overcome.

As regards *point (2)*, Applicants allege "the observation that recombinant proteins in E. coli can aggregate when expressed at high levels is largely irrelevant to a screening method, in which high level expression of individual library members is not needed. Use of phage libraries in bacterial hosts to screen for two-chain antibodies is well known in the art, so techniques for avoiding aggregation of the secreted chain--if it is ever an issue--are apparently known. See, for example, Griffiths et al., The EMBO Journal 13:3245-3260 (1994))"; Kipryanov recognized that these

methods work; and "The fact that, as Kipryanov goes on to note, high level expression of a recombinant protein in E. coli (e.g., for large-scale production of a desired antibody) may result in aggregation is irrelevant to the question of whether lower levels that are adequate for screening purposes would work."

Response to Arguments

Applicants have not even provided a copy of the Griffiths reference with their filed Response of 3/17/09 thus precluding the examiner from verifying the reference content.

As regards the examiner's previous reference to Kipryanov, it is noted that Applicants have conveniently edited the reference interpretation in favor of their position, which is to wholly ignore it's teaching, namely, that in order for this method to work in a bacterium, where the bacterial host cells are "***secreting*** the heavy chain of an antibody" as instantly claimed, the protein would be required to comprise a bacterial signal peptide in order to even be expressed in the periplasmic space much less "secreted." Elements (a) and (d) in each of the generic claims 1 and 2 require protein secretion from a bacterial host.

As regards Applicants assertion that screening antibodies does not require the same extent of expressed protein as required for large-scale production, the examiner finds this to be wholly irrelevant to the instant rejection. Zauderer et al. (US 20080167193; published 7/10/08; priority to 11/14/01) substantiate the examiner's position stating:

"Immunoglobulin libraries constructed in bacteriophage may derive from antibody producing cells of naive or specifically immunized individuals and could, in principle, include new and diverse pairings of human immunoglobulin heavy and light chains. Although this strategy does not suffer from an intrinsic repertoire limitation, it requires that complementarity determining regions (CDRs) of the expressed immunoglobulin fragment be synthesized and fold properly in bacterial cells. Many antigen binding regions, however, are difficult to assemble correctly as a fusion protein in bacterial cells. In addition, the protein will not undergo normal eukaryotic post-translational modifications. As a result, this method imposes a different selective filter on the antibody specificities that can be obtained" [0013],

and

"Assays for expression in bacterial hosts are often impeded, however, because the protein may not be sufficiently expressed in bacterial hosts, it may be expressed in the wrong conformation, and it may not be processed, and/or transported as it would in a eukaryotic system. Many of these problems have been encountered in attempts to produce immunoglobulin molecules in bacterial hosts…" [0016]."

The rejection was maintained in the Office Action of 3/17/10 as follows:

"Applicants allegations on pp. 9-12 of the Response of 12/2/09 and further in view of the amendments to the claims have been considered and are not found persuasive. Applicants allege the invention involves phage-based antibody screening assays that involves association of separate heavy and light chains (or fragments thereof) on the surface of the phage generally require that both of the chains be secreted in the periplasmic space (one of the chains being fused to a phage protein that self-assembles with other phage proteins to form the phage particle and the second chain being expressed as a separate polypeptide that associates with the phage- anchored chain). This is illustrated by the Griffiths et al. reference (EMBO J 13:3245-3260)."

Response to Arguments

The examiner has considered the arguments, the Griffiths reference and the amended claims in combination and does not find the method as being enabled for its intended use based on the claim amendments. Looking to the specification for what is actually disclosed and enabled and in view of the cited art references, the examiner concludes that the claims recite elements that are not supported by the specification that would permit an operable method.

For example, the specification only teaches the following:

"[0062] Generally, to generate a phage library, light chain-encoding DNAs are incorporated into appropriate phage vectors, so that the light chains will be displayed on the external surface of the phages, as fusion proteins with coat proteins or display anchor proteins. Herein, there are no particular limitations on the phage vectors. Generally, they are vectors that contain a bacteriophage replication origin (ori), and are induced through modifications of the phage genome. Phage vectors preferably encode, in the direction from N to C terminus, (1) a light chain, and (2) a phage membrane anchor domain (all or a portion of a coat protein or display anchor protein). Furthermore, a sequence encoding the prokaryotic cell secretion signal domain, which enables proteins encoded by the above-mentioned (1) and (2) to be secreted to the outside of host bacterial cells and incorporated into bacteriophages, is placed before the sequence encoding the light chain of (1), as necessary",

and

"[0068] WO95/15393 also proposes construction of antibody libraries using eukaryotic cells, which allows more accurate investigation of the actual antigen-binding capacity of antibodies from the screening stage. Therefore,

in place of bacterial hosts such as E. coli, the methods of the present invention can also employ antibody libraries from eukaryotic cells that present antibodies on their cell surfaces. More specifically, an expression vector carrying a gene that encodes a desired heavy chain (for example, Fd), and is linked downstream of a promoter appropriate for its expression and a signal sequence which enables the secretion of the heavy chain, is introduced into eukaryotic host cells. Furthermore, expression vectors are constructed with light chain-encoding genes linked to a transmembrane region-encoding sequence and inserted downstream of an appropriate promoter, so that the light chains will be displayed on cell surfaces when expressed. The transmembrane region is preferably added to the C terminus of expressed light chains. By introducing light chain expression vectors into the aforementioned heavy chain-secreting host cells, host cells which express on their cell surfaces antibodies that bind to a desired antigen can be selected. The displayed antibody is a Fab fragment when Fd is used as the heavy chain and those comprising VL and CL are used as the light chains."

The specification does not teach a vector encoding a secretion signal linked to the Fd to be used in combination with a vector encoding the light chain, a bacterial signal sequence and a phage membrane anchor where both are to be used for secretion in prokaryotic cells. This above recited paragraphs and the figures are the extent of written support and enablement for the instant claimed method. Nevertheless, Applicants allege to be usable and enabled combing the elements of i) the first Fd linked to any bacterial secretion signal peptide, ii) the light chains linked to any bacterial secretion signal peptide, and iii) the light chains being further linked to any phage membrane anchor domain and in any order with respect the given Fd and light chain. The examiner does not identify support for the combination of these elements in the manner recited in the claims in the specification or the drawings as filed."

Applicants allegations on pp. 8-13 of the Response of 2/9/11 have been considered and not found persuasive. Applicants allege for purposes of brevity, "The specification need not contain an example if the invention is otherwise disclosed in such a manner that one skilled in the art will be able to practice it without an undue amount of experimentation. In re Borkowski, 422 F.2d 904, 908, 164 USPQ 642, 645 (CCPA 1970)." In the present case, the specification provides ample disclosure to permit one of ordinary skill in the art to practice the claimed method without an undue amount of experimentation, using standard techniques well known in the art"; and "Rather than argue the point, Applicant has simply deleted the clause from the claims. It is unnecessary verbiage anyway, as one of ordinary skill in the art would understand that the claim language "bacterial host cells secreting a Fd" that remains in the claims implies that there is a mechanism causing the bacterial host cells to secrete the Fd, and that the standard way to do that is by including in the host cells a DNA that encodes the Fd linked to a secretion signal."

Response to Arguments

The examiner has maintained (and reiterates) that the claimed method steps using the instant claimed phage display system are not enabling for assembling a Fab fragment from a first, second, third, etc., Fd with any light chain absent additional steps/features to perform the method with any reasonable expectation of success.

To further clarify this argument, the examiner submits that the generic claims all read as the Fd protein portion being secreted from the bacterial host cells. See step a) Claim1; steps a) and d) Claim 2; step f) of Claim 6; and step f) of Claim 7. What is meaning of the Fd portion being secreted and how does this occur? Is it transported across the cytoplasmic membrane into the periplasmic space in order to be understood as being "secreted"? Is it transported across the outer cell wall membrane into the culture medium in order to be understood as being secreted? If either case is encompassed within the meaning of being “secreted” for this method, then how is the transport and secretion processes accomplished?

Next, the examiner submits that antibody phage display technology usually requires linking the Fd and light chain together in the form of sequential ligation in order to yield a fusion protein (see Pilkington et al. (Molec. Immunol. 33:439-450 (1996); Materials and Methods p. 440, Col. 2, ¶3)). Silacci et al. (Proteomics 5:2340-2350 (2005)) is contemporaneous and reflective for the state of the art with respect to producing antibodies by phage display in teaching on p. 2347, that connecting VH and VL chains normally require peptide linkers. In addition, on p. 2347 Silacci teaches that

two factors determine whether dimerization occurs: (1) antibody concentration and (2) relative affinities of VH and VL domains.

Applicants would have the Office believe that the diverse population of light chains expressed by the bacterium-infecting phage would encounter a stoichiometrically sufficient amount of a single kind of Fd protein some where being secreted either in the periplasmic space or into the actual medium itself, and that in the formation of phage capsid proteins, the Fd and any light chain would randomly associate and pair through disulfide linkage into a functional, antigen binding Fab unit expressed in the capsid protein of the phage, *and* where the newly paired Fab fragment binds a second antigen distinct from the antigen recognized by the starting Fd population. The examiner reiterates that there is no working example showing the success or operability of the instant claimed method steps in producing a Fab from a randomly secreted Fd by the host bacterium upon infection with a light chain expressing phage particle to the extent that the ordinary artisan could practice the method with reasonable success absent undue experimentation.

Finally, in reference to Hoogenboom et al. (Nuc. Acids Res. 19(15):4133-4137 (1991)), Hoogenboom teaches display of Fab fragments from assembly of Fd and light chains on phage (Fig. 4) are produced in the following manner (p. 4135, Col. 2- p. 4136, Col. 1): The transcription of the antibody-g3p fusions is driven from a gene promoter and the fusion protein targeted to the bacterial periplasm by means of the g3p leader (Fig. 1c); The transcription of antibody-gp3 fusions is driven from the inducible Lac Z promoter and the fusion protein targeted targeted to the bacterial periplasm by means of

the pelB leader; and The phagemid pHEN1-III grown in E coli HB2151 was rescued with fd-tet-DOG1-IV phage and phage(mid) shown to bind phOX-BSA but not BSA. This demonstrated that soluble heavy chain is correctly associated with light chain anchored to g3p and similar results were obtainbed with the reverse experiment. A Fab fragment is assembled on the surface of phage by fusion of either heavy chain or light chain to g3p, provided the other chain is secreted into the periplasm using the same or another vector (Fig. 4). Finally, Hoogenboom teaches that any library is mixture of “fd phage” (titer 5 $x10^{11}$) and rescued phagemid (titer 2 x 10^{10}). The examiner submits that Hoogenboom is only enabling for screening a single, antigen recognizxing Fab (Ox-BSA) from phage display where the Fab is homogeneous and the single antigen is homogeneous, and thus the success of Hoogenbooms method is a biased selection process demonstrating the single success for a single kind of Fab.

The examiner submits that Hooggemboom is not enabling for the full scope and breadth of the instant claimed method. The scope of the claims must bear a reasonable correlation with the scope of enablement. See In re Fisher, 166 USPQ 19, 24 (CCPA 1970). "[T]o be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation.'" *Genentech, Inc. v. Novo Nordisk*, A/S, 108 F.3d 1361, 1365 (Fed. Cir. 1997) (quoting *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993)). Also see *Rasmussen v. Smith Klein Beecham Corp.,* 413 F.3d 1318, 1325 (Fed. Cir. 2005) "If mere plausibility were the test for enablement under section 112, applicants could obtain patent rights to “inventions’ consisting of little more than respectable guesses as

to the likelihood of their success. When one of the guesses later proved true, the "inventor" would be rewarded the spoils instead of the party who demonstrated that the method actually worked."

This supports the examiner's arguments that the instant claimed method is non-enabling and therefore unpredictable in producing a diversity of antigen-specific much less antigen cross-reactive Fab units from any Fd and any light chain, wherein the kinetics of the dimerization will be unpredictable outside the cell wall much less periplasmically in the bacterium, if both domains are not made as a fusion protein.

The rejection is maintained.

Conclusion

8. No claims are allowed.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LYNN BRISTOL whose telephone number is (571)272-6883. The examiner can normally be reached on M, T, Th and F from 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Misook Yu can be reached on 571-272-0839. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lynn A. Bristol/
Primary Examiner, Art Unit 1643